The Perturbations of Drift in a Stratified World

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In Dialogue with Erratic Drift

In their current research project Erratic Drift, artists Minty Donald and Nicolas Millar offer some prompts for thought about the world we inhabit, a process that in field-orientated, Geologic circles tends to be undertaken via an embodied encounter with the surficial rocky elements of the Earth and their various morphologies. Walking on and through, as well as looking upon, touching (and even, at times, tasting and smelling) rock is understood to provide a series of questions about its constitutive parts, which in turn leads to questions of origin, transformation, movement, impact and the nature of time passing. The most prevalent mode of rock that Geologists, and indeed people across the globe, engage with in their everyday lives is, as Minty and Nick intimate, drift. Drift comprises the surficial detritus of unconsolidated sediments, such as boulders, gravel, sand, silt and clay, that lie atop and obscure the consolidated layers of rock that we refer to as strata. Drift lies in discontinuous patches of disparately sized and chemically composite materials that are the product of river, lake, ice, marine and aeolian depositions. Often bemoaned by Geologists as obscuring the real bones of the planet, it is this drift that has, nonetheless, become increasingly central to debates on the transformation of the environment in the Anthropocene as this material has been drained, farmed on, crushed, concretized, built with, bored, extruded, tunnelled and excavated.

In building a dialogue with Erratic Drift I want to acknowledge the ‘geologizing’ of a Situationist practice of drifting, a practice that is well referenced elsewhere in this special issue and that, in some essays, has already been extended to include the non-human. Playing on the parallel use of the word ‘drift’ in Situationist and Geologic thought and practice, Minty and Nick offer the notion of an entangled, site-specific, ‘human-geological drifting’ that attends to the particular affects and atmospheres of a stone-y urban environs, as well as the contours and edges, dips and swells of an urban morphology built on and from drift. It is drift, for example, that forms the sand beneath the cobblestones lifted by students to hurl at police in the Paris riots of 1968, and that animates the painted-on slogan ‘Beneath the pavements, the Beach’.

Erratic Drift is a wonderful example of how this materiality can be acknowledged and negotiated within a dérive -- indeed, drift becomes agential in its own right, directing both orientation and movement -- while also opening up for consideration the broad spatial and temporal vistas that a dérive unfolds within. Continents, as well as the minuscule particles we breath in, drift.

What Erratic Drift also intimates, however, is the decidedly erratic unfolding of drift as a Geologic term. Long understood in European scholarly circles as a product of the Great Flood, drift was radically transformed not once but twice. In 1839, in his opus on The Silurian System, Scottish Geologist (and ex-soldier) Roderick Murchison (1792--1871) described his difficulties in confirming such a Biblical provenance. Walking the hills and valleys of south Wales, what drift made evident to Murchison was the fact that a catastrophic narrative was not borne out by the evidence before him. Drift, he argued, could be attributed to marine incursions and the melting of sediment-laden icebergs; or, it could be deposited by land ice as well as rivers and lakes. The patchy geographies of drift, it seemed, were a matter of local context, rather than a global condition. The term was transformed once again by the British Geological Survey (BGS) in the Drift Maps to include the products of human activity, as an established drift taxonomy predicated on morphogenetic (shape-defined) and lithogenetic (composition-defined) criteria now included: ‘made ground’ such as constructional fills, waste heaps, embankments and reclamation fills; ‘worked ground’ such as quarries, cuttings and dredged channels; ‘landscaped ground’ where the surface has been substantially remodelled; and ‘disturbed ground’ such as mine works where excavation and subsidence are in a complex relationship with each other (BGS Rock Classification Scheme 1999: 5).[{note}]1

In what follows I want to unpick some of the implications of this erratic drift of a Geologic drift for current debates on the nature of an Anthropocene, and the apparent blurring of a deep time and a human history. I want to stress, first, that drift exceeds -- perturbs even -- the taxonomic efforts of Geologists, and thereby serves to draw attention to the many different ways of knowing the lithic that animate even so ‘grounded’ a discipline as Geology. That a Geologically inclined arts and humanities has tended to read the Earth as a stratified, lithic archive says more about the power dynamics of the discipline, and in particular a stratigraphic

imperialism, than it does about the nature of the materials invoked. Second, and despite its controversies, Geology has tended to provide a measure of surety about the world, and the place of humanity within it. Where Geologists once looked to the subterranean, however, for evidence as to a planetary history, an Anthropocene has inverted this gaze. Carbon-fuelled economies have poured materials upwards and outwards, warming oceans and atmospheres in the process. The anthropocentric drifts identified by the BGS proliferate through volumes of space, from the dusts clouding skies to the sediments chugging into the seas. Dérives, it might be argued, unfold not in cities, nor in sites, nor even landscapes, but amid the drift.

After the Deluge, the Drift

In The Silurian System (1839), Murchison used observations of sediments and fossils from his field campaigns in south Wales to provide glimpses into a time when a warm global climate kept ice in retreat and sea levels high, violent storms swept across low-lying island chains and multi-cellular life crept onto land. In Chapter Thirty-Eight, having addressed in word and sketch the solid strata that underpin the Old Red Sandstones of the region, Murchison turns to the matter of drift, which, he observes, some geologists also refer to as diluvium. In a footnote appended to this observation, Murchison notes that this is a misapplication, and that,

> He who connects diluvium with the Deluge of Holy Writ must contend that all such detritus was produced in one short period. But geologists having now completely ascertained, that each region of the earth has its own superficial diluvia, produced by distinct and separate action, the unambiguous word drift is proposed, which when preceded by the name of the tract whence the materials were derived, expresses at once the intended meaning. Hence, 'Silurian drift'… (1839: 509, n. 1)

The issue that Murchison is explicitly raising here is the growing separation of a Geological sense of deep time from what was referred to (disparagingly) as a 'literal' Biblical narrative of the Great Flood as responsible for the spread of unconsolidated, unsorted materials over the landscape. In the main text of the book, and looking to the evidence of locally sourced detritus before him, Murchison concluded that, 'the action of the bodies of water that produced it, must also have been local, and totally

unconnected with any vast or general deluge, even confining the word “general” to a small portion of Europe’ (510).

Murchison’s (1839) exposition of drift was controversial as empirical evidence against the Great Deluge thesis, and as a process-orientated term that admitted of no confirmed cause; but also, drift was perturbing as to its place in a stratigraphic record. As historian of Geology Jim Secord notes, for Murchison,

> indeed for almost all nineteenth-century British geologists … geology was essentially stratigraphy, a taxonomic enterprise which brought sequential order out of the apparent chaos of the strata. Using this order, geologists could color their maps guided by sharply bounded groups of strata. … Rather than considering the strata as the products of process and time, Murchison typically viewed them as ‘systems,’ ‘units,’ and ‘formations,’ as elements in a classification… A missing page had been replaced in the book of nature: a new period had been added to the history of the earth. (1982: 415--16)

Drawing on the Old Norse notion of a mass of materials being driven, drift, for Murchison, was a useful term because it indicated the many different processes -- some known, others hypothesized, and all varying in presence and extent across the Earth -- that had led to the mobilization and laying down of these materials. Even the expertise of Murchison, however, was thwarted in the effort to work out which deposits were laid down first, as there was an ‘intermixture’ of local and foreign materials as well as a tendency for one temporal sequence to be upended at other sites (1939: 526--7). And yet, in tracing the presence of solely local drift within what Murchison referred to as ‘the Silurian region*’* (1983: 523, my emphasis), these ephemeral materials were, despite their tendency to travel and to intermixture, to be firmly rooted in place, part and parcel of a bottom-up temporal framework. Indeed, it is this rooted, place-based focus that rings loud through Murchison’s acclaimed work, as The Silurian System knits together personal reminiscence and sketches, notes from learned friends and local mythologies, and vociferously contesting views on the ‘how’ if not the ‘what’ of a site’s depths, to animate this vertical slice of the globe.

For Murchison, as with most Earth Scientists today, the field site was the focus of empirical investigation, its manifest morphologies providing clues as to its formation,

but also of its relationship with other sites through the work of processes. The site was to be encountered through the gaze, certainly, but also through the work of the other senses, particularly touch. Indeed, it was this felt engagement with the site that prompted a series of analytically framed questions concerning landform development: to walk the landscape, as Murchison did time and again, was to conjure up both the Silurian region and the expert Geologist. This was a visual imagining that acknowledged and then disavowed grand surface impressions as open to myriad interpretations, and hence duplicities, and sought instead, via a series of more intimate encounters, signs telling of the work of primal forces. In the process, as Barbara Stafford writes in regard to a pervasive methodism, 'a "hard," prestigious method, deemed intellectually superior to the "soft," loose, irregular, or geometrically shapeless material it was supposed to regularize, was imposed from on high and from the outside' (1993: 466).

The Prevalence, and Work, of a Stratified Anthropocene

Why remark upon this sustained effort to pin down the meaning and import of a loose, irregular drift through a rigorous methodism? Why press on this attempt to resolve drift within a vertical, bottom-up reading of the Earth's history? For me, such an accounting matters because it is this same stratigraphic impulse that has helped underpin the recent uptick in the conceptual work expected of Geology in ongoing Anthropocene debates more broadly, as well as in efforts to geologize Performance and Theatre by referring to, for example, deep time. In short, an Anthropocene epoch has been broadly outlined as a fossil-fuelled, planetary condition that has a continually updated geosynchronous signal of anthropogenic radionuclides and plastics, and a raft of rapidly intensifying exposures, vulnerabilities and securitizations. Geosynchronicity places materials within a stratigraphic record, and as such is a key product of the Geologic imperialism promulgated by Murchison, among others, that effectively projected an eventual history on to the planet itself such that an 'Earthly archive' became the meta-organizing device. As Szerszynski emphasizes, this historical sensibility -- emerging from a European Antiquarianism and Theology, and manifest in Poetry as well as Geology -- 'progressively gathered the Earth together as a system, the diversity of its visible, surface features now

understood as the result of slow, invisible unifying forces such as sedimentation, erosion, volcanism and eventually tectonics' (2017: 5). Field sites across the globe were to be investigated as to how they made manifest this Earthly archive, their composition and fossils closely examined for matches with 'known' vertical cross-sections of time, such as the Silurian. Each vertiginous site provided yet more nuance to this planetary narrative but was also illuminated via its place within the same.

Such a shared biography of the site also, of course, ushers in a shared fate. A series of planetary problematics have been expounded upon in recent decades, including the impacts of a carbon-fuelled capitalism on atmospheric, terrestrial, maritime and cryogenic environments, culminating in the notion of an Anthropocene era characterized by humanity exerting a transformative force traditionally reserved for tectonics. Small wonder that a Geologically inclined Anthropocene has ushered in debates on humanity as a future fossil species, birthed in the Holocene and flailing as planetary conditions are profoundly transformed. Small wonder also that there is now a proliferation of engagements that seek to 'geologize' the Humanities outside of a 'sublime' that simply reinforces human exceptionalism; and which, it has been well argued, Geologists have long held to as a means of situating the place of humanity in an inhuman cosmos (Furniss 2010). This 'geologizing' can be seen in an examination of how a Geologic sense of deep time can, on the one hand, undercut a sovereign sense of humanity as a tectonic subtending of society becomes felt, but can also, on the other hand, nurture a sense of the tectonic reach of humanity as the 'anthropogenic forcing' of physical processes -- unto an Earth System itself -- becomes increasingly evidenced. For the Humanities, Dipesh Chakrabarty (2009) writes, this twofold movement spells the narrative end of a 'human history' as separate from that of the planet, with the consequence that the deep time of humanity as a species now spells extinction.

Bearing in mind the complex practices behind a British-led stratigraphic imperialism, as Claire Colebrook observes, 'What the Anthropocene seems to have imposed upon us is one mode, temporality and logic of stratigraphy, where the deep time of the earth's discernible layers becomes the privileged scale for other times and space' (2016: 445). Such an observation, I suggest, prompts such questions as: Who and in what context has been enrolled in this 'us'? How has such a privileging

of deep time taken place? What imaginaries have been displaced, or transformed in the process? And, how does a Geological imaginary itself tend in contrary directions, unfolding Earthy worlds that do not necessarily square up into one logic? The multi-agential, survey defying, taxonomically mutable, drifting geographies of drift -- so perturbing to a vertiginous, solid Geology -- perhaps open up some space within Geology itself for an engagement with the Anthropocene that eschews a dominant stratigraphic tempo; but also, these drifting geographies can, perhaps, resonate with other forms of drifting that work with and trouble the 'site'?

The imaginaries and practices that compose site-based performance, for example, often draw explicitly upon geology, among other materialities, as a means of countering the notion of site as some kind of empty container awaiting meaning and direction. For Mike Pearson for example,

> The geology of north Lincolnshire is simple: gently inclined horizontal beds of Jurassic limestone and Cretaceous chalk. The topography of scarps, dips and intervening clay vales is easy to grasp, and all that proceeds from this too -- environment, land use, historical formation, demographic distribution. I learned it early, and how to get around: from Sunday motoring tours, from delivering fish-and-chips. An open terrain: upon which to situate key events and occurrences as a spatial dimension of memory. Region as a concatenation of personal, familial, communal, and eventually disciplinary moments, related to distinct locales, at a variety of scales: deriving from direct experience, hearsay and instruction, and recalled through chorographic visitation. (exchange from Matless and Pearson 2012: 125)

Geological surveys make manifest an already known, and worked, landscape, but also lithic materials help provide an immersive environment within which a range of affects are embodied, experienced, recalled and forgotten. Interposed with other forms of cartography, or 'way-finding', these have certainly helped animate a recent turn towards 'deep mapping' that takes 'region as its optic' (Pearson 2006) to draw out the affective relations between people and place, and that seeks a productive, shared dialogue that draws together a 'multiplicity of "creative" and "scientific" material' (Biggs 2011: 5) as a means of fostering an environmental as well as social sense of responsibility. The hard-bodied, knowing gaze and touch of Murchison the

Geologist, however, that firmly situates phenomena within a meta-organizing scheme becomes subverted in a performance that hinges on a ‘purposeful assemblage of fragments’ (Pearson 2010: 154), including voices of different discursive registers and narrative styles.

A cautionary point in regard to such an assembling of Geologic ways of knowing the world -- its narrative style -- is that drift, as the preceding discussion indicates, exceeds any easy taxonomic move. Its perturbed place in bottom-up stratigraphy counters, I would argue, a tendency to present science as the (unproblematic and unironic) laying down of categories. The word ‘region’, as David Matless notes in engagement with Pearson’s comments on the geology of North Lincolnshire, ‘carries strong associations in geography; heavy freight, ghosts which wake at the utterance of the word’ (exchange from Matless and Pearson 2012: 124). Certainly, for geographers, the term retains a sense of a top-down, formal political delineation of space. And drift, in Murchison’s understanding of the term, very much resonates with a ‘sense of the fundamental unmappability of the world the “deep map” sets out to map’ (Roberts 2016: 5, original emphasis). Even an agreed upon classification system allowing drift to be noted on a map remains in debate, as the BGS strives to provide ostensibly objective, sedimentological, structural, physical and chemical criteria fixing the definition of what drift is (and hence adding to a ‘lithostratigraphy’ that delineates strata) over and against genetic accounts based on the work undertaken to deposit materials (BGS 1999: 4). What is more -- and this is a more challenging issue in regard to a deployment of ‘deep’ in deep mapping -- unlike solid Geology, drift does not readily lend itself to an excavation metaphor, wherein one digs downwards to reveal more and more layers of place. Its intermixtures reveal not only a travelling from one region to another, but a multi-directional movement across scale, from the micro to the macro; movements that are both singular, in the sense that they are unique, and contingent, in that they hinge on dense materialities that are complexly networked in the form of intensities, exchanges and substitutions. Drift, in sum, is more than a proof that space is no mere empty container. Its materiality is dynamic, entering into and extruding from the fields, homes, psyches and bodies of (geologized) human beings to be sure, but also crystallizing in a host of milieux that capture and enhance Earthly forces.

Drifting in the Drift

This discussion of drift points up the 'looseness' of Geology itself, insofar as there were, and continue to be, many narrations of the lithic. Some of these are more amenable to the notion of rock as some kind of strangely inert substratum to reality. That is, a consolidated, stratified geology, for example, has often been rendered as a passive resource, subject to extraction, as well as, in more philosophical terms, a mass awaiting formation from outside forces (DeLanda 1997). Solid geologies are often considered inert too by virtue of their alien physicality, which renders their being apart from human causation and outside of human experience. Existing in an inhuman space-time continuum, they have become the ultimate touchstone for reality. Indeed, it is this realness -- this cosmological substratum -- that an anthropogenic forcing of physical processes is posited as impinging upon in an Anthropocene. Drift is not so amenable.

Second, drift, as walked through, explored and interrogated by Murchison and his colleagues, was uncovered within a time and space when Geology provided for a sense of order over and against chaos; its layered morphologies both a finding of, and a naming of, the atavistic in the midst of civilization; its perturbing presences a subterranean confirmation of the Gothic. But what drift can help highlight is how what was a subterranean, hidden dramaturgy has in effect become turned inside out. The artificial drift that the BGS surveys, for example, extends far beyond the urban boundaries of the nineteenth-century cities, such as Glasgow, that Murchison inhabited. The canal building and land drainage of the Victorian era -- fissures that Geologists once peered into for signs of other histories -- have been subsumed by a large-scale forcing of erosion and mass movement that has proliferated drift. The smallest of particulate drift matter still floats in the wind, but now combines with hydrocarbons from combustion engines as well as soot, grit and smoke. With this exposure of the Earth's innards the histories that Geologists sought in the ground of their field sites have become an everyday living with drift.

It is timely, then, to consider how conversation and practice that hinge on a geologizing of the human -- a conversation and practice that have so far assumed a solid, stratified geology -- could indeed proceed as a 'human-geological drifting', as Minty and Nick put it, in the midst of drift. What is at stake in their rendering of Erratic

Drift is, as I see it, a valuing of a new form of Drift Map that reasserts the sensuous, embodied way-finder of Murchison's ilk while eschewing the distanciated, if hyper-mobile, gaze of the BGS and its sharp-lined, hatched and blocked cartographies. For me, what Erratic Drift provides for is a prototype Drift Mapping for and of the Anthropocene. In the process, what Erratic Drift also intimates are the profound changes that have emerged in Anthropocene environment. Geology was never a simple, open terrain upon which everyday activities occur, but what the pervasive matter of drift now makes clear is the degree and intensity of anthropocentric, terraforming forces. Drift permeates alongside, beyond and within the human-geological way-finder, host now to new forms of exposure and vulnerability, new voids and presences. And so a dérive is imbued by, but also repositions, geology as it unfolds, a process that the ludic activities of Erratic Drift -- in concert, I hope, with conversations with Earth Scientists -- allow reflection on.

Note

1 In the UK, the first formal 'Drift Maps' and 'Solid Geology Maps' made it through to publication in the 1870s as part of what became known as the 'Old Series'. A 'New Series' of 'Solid', 'Drift' and 'Solid and Drift' Maps was published from 1889 onwards, and these maps also used the term 'superficial'. Circa 2003, the British Geological Survey started to publish maps as 'Bedrock and Superficial' rather than 'Solid and Drift' but there is an overlap with both terms being used until 2006.

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